Remarks/Arguments

I. Status of the Claims

In the final Office Action, the Examiner indicated that claims 1-9, 11-19, 24 and 25 are pending, and rejected claims 1-6, 11-16 and 24 under 35 U.S.C. §103(a).

Also in the Office Action, the Examiner indicated that claims 7-9, 17-19, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim. The Applicant appreciates the Examiner's indication that these claims are directed to allowable subject matter. These claims are retained in dependent form, however, because they depend from claims that are themselves directed to allowable subject matter for the reasons discussed below.

Claims 10 and 20-23 were previously canceled in light of a restriction requirement.

Claims 1-9, 11-19, 24 and 25 are pending for reconsideration.

II. Rejection of Claims 1-6, 11-16 and 24 under 35 U.S.C. §103(a) as being Unpatentable over Lee et al. (U.S. Patent No. 5,245,661)

At pages 2-4, item 4 of the Office Action, claims 1-6, 11-16 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee et al. (U.S. Patent No. 5,245,661).

This rejection is respectfully traversed to the extent that it is maintained. As discussed below, the Lee et al. patent fails to disclose or suggest the claimed invention. Also, as discussed below, there is no suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference to Lee et al. as suggested by the Examiner. Moreover, as discussed below, there was no reasonable expectation of success in modifying the reference to Lee et al. as suggested by the Examiner.

The Lee et al. patent fails to disclose or suggest the invention as set forth in the independent claims, i.e., claims 1, 6, 11, 16 and 24. The Lee et al. patent fails to disclose or suggest watermarking signals representing a work (as required by claims 1 and 11) and authentication of candidate data (as required by claims 6, 16 and 24). The claimed invention accomplishes its watermarking and authentication using an uneven sampling rate. The Lee et al. patent describes the use of non-uniform sampling time intervals – not for watermarking and authentication – but for synchronization of a descrambler relative to a scrambler. The distributed sample scrambling system disclosed in the Lee et al. patent scrambles and descrambles digital bitstreams by adding SRG (shift register generator) sequences to the digital bitstreams. Only the Lee et al. patent's scrambler SRG sequence and descrambler SRG sequence are disclosed as being sampled using non-uniform sampling time intervals. Neither the scrambler input bitstream nor the scrambled bitstream in the Lee et al. patent is disclosed as being sampled using non-uniform sampling time intervals. Hence, the Lee et al. patent fails to disclose or suggest the claimed invention's watermarking and authentication.

More specifically, independent claim 1 is directed to a method of electronic watermarking signals representing a work, e.g., a copyrightable work such as musical

recording, movie, video game and/or computer program product. Claim 1 recites the steps "sampling input signals using an uneven sampling rate, wherein the input signals are signals representing the work" and "outputting unevenly sampled signal data representing the work". Independent claim 11 is directed to an apparatus for electronic watermarking signals representing a work and includes similar limitations in the form of means-type recitations. The Lee et al. patent fails to disclose or suggest watermarking signals representing a work, much less the recited steps and means. The Lee et al. patent describes the use of non-uniform sampling time intervals by sampling means 2 (in a scrambler) and sampling means 4 (in a descrambler), but only for synchronization of the descrambler relative to the scrambler. The samples generated by the scrambler's sampling means 2 are sent to comparator 3 (in the descrambler) for comparison with the samples generated by the descrambler's sampling means 4. For synchronization of the descrambler, the state of the descrambler SRG (shift register generator) is repeatedly corrected based on the comparison until the descrambler SRG sequence becomes identical to the scrambler SRG. The Lee et al. patent does not disclose or suggest using these samples (i.e., samples generated by the sampling means 2,4 using non-uniform sampling time intervals) in the context of watermarking signals representing a work as required by independent claims 1 and 11. In this regard, it is significant to note that the samples generated by the sampling means 2,4 using non-uniform sampling time intervals are not output as part of the scrambled bitstream or the descrambled bitstream as described in the Lee et al. patent.

The rejection states:

> Regarding claims 1 and 11, it is noted that Lee does not explicitly disclose the use of samples in the context of watermarking signals representing a work as now required by independent claims 1 and 11. It would have been obvious to one of ordinary skill in the art, however, to implement the claimed invention because one of ordinary skill in the art

> understands that once the concept of uneven or non-uniform sampling rate is utilized, the nature of the input signals is irrelevant since all these signals are represented in digital form (i.e., a bunch of zeroes and ones). The motivation would have been to provide a more versatile distributed sample scrambling method/system. (Final Office Action, page 2, line 23 through page 3, line 5.)

Granted, the nature of the input signals is often irrelevant with respect to digital sampling. However, the signals that the Lee et al. patent teaches are sampled using non-uniform sampling time intervals are not its scrambler input bitstream b_k or its scrambled bitstream $b_k + S_k$, but rather the outputs of its SRGs (shift register generators), i.e., the scrambler SRG sequence S_k output from SRG 1 in the scrambler and the descrambler SRG sequence $\wedge S_k$ output from SRG 5 in the descrambler. The distributed sample scrambling method/system disclosed in the Lee et al. patent scrambles its scrambler input bitstream b_k by adding the SRG sequence S_k thereto and descrambles its scrambled bitstream $b_k + S_k$ by adding the SRG sequence $\wedge S_k$ thereto. Neither the scrambler input bitstream b_k nor the scrambled bitstream $b_k + S_k$ in the Lee et al. patent is disclosed as being sampled using non-uniform sampling time intervals. There is no motivation in the prior art for modifying the distributed sample scrambling method/system disclosed in the Lee et al. patent to sample its scrambler input bitstream b_k or its scrambled bitstream $b_k + S_k$ using non-uniform sampling time intervals. Also, there is no motivation in the prior art for modifying the distributed sample scrambling method/system disclosed in the Lee et al. patent to use its sampling means 2, 4 to sample signal representing a work in lieu of the disclosed SRG sequences S_k, $\wedge S_k$.

Independent claim 6 is directed to a method of authentication of candidate data and recites the steps "sampling original signals using an uneven sampling rate to produce unevenly sampled original signal data", "comparing the unevenly sampled original signal data with the candidate data for a degree of match", and "determining whether the

candidate data is authentic based on the degree of match". Independent claim 16 is directed to an apparatus for authentication of candidate data and includes similar limitations in the form of means-type recitations. Independent claim 24 is directed to a data processing system and likewise includes similar limitations in the form of means-type recitations. The Lee et al. patent fails to disclose or suggest authentication of candidate data, much less the recited steps and means. The Lee et al. patent describes the use of non-uniform sampling time intervals by sampling means 2 (in a scrambler) and sampling means 4 (in a descrambler), but only for synchronization of the descrambler relative to the scrambler. The samples generated by the scrambler's sampling means 2 are sent to comparator 3 (in the descrambler) for comparison with the samples generated by the descrambler's sampling means 4. For synchronization of the descrambler, the state of the descrambler SRG (shift register generator) is repeatedly corrected based on the comparison until the descrambler SRG sequence becomes identical to the scrambler SRG. The Lee et al patent does not disclose or suggest using these samples (i.e., samples generated by the sampling means 2,4 using non-uniform sampling time intervals) to determine whether candidate data is authentic as required by independent claims 6, 16 and 24.

The rejection states:

> Regarding claims 6 and 16, it is noted that Lee does not explicitly disclose to determine whether data is authentic as now required by independent claims 6 and 16. It would have been obvious to one of ordinary skill in the art, however, to implement the claimed invention because one of ordinary skill in the art understands that the technique disclosed by Lee to correct the descrambler SRG state in Lee (column 4, lines 1-16) can also be used to determine whether candidate data is authentic since it is based on whether different unevenly sampled signals are identical to each other. The motivation would be to provide a more versatile distributed sample scrambling system. (Final Office Action, page 3, line 16 through page 4, line 2.)

> Claim 24, which now includes the limitation of claims 11 and 16, is rejected for reasons similar to those set forth against claims 11 and 16. (Final Office Action, page 4 lines 3-4.)

Indeed, the Lee patent does teach the use of non-uniform sampling time intervals -- but only in the context of synchronization. The fact that known principles are employed does not make an invention obvious; most patentable inventions employ known principles. *Lindemann Maschinenfabrik v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). Using non-uniform sampling time intervals for synchronization as disclosed in the Lee patent, is entirely different than using an uneven sampling rate for authentication of candidate data as claimed. It would not have been obvious, short of prohibited hindsight, to apply this teaching of the Lee et al. patent to authentication of candidate data.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, not applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Here, however, the prior art does not teach or suggest using an uneven sampling rate in the context of watermarking and authentication. Moreover, there is no reasonable expectation of success, with a basis in the prior art, for using non-uniform sampling times in the context of watermarking and authentication. The disclosed success in using non-uniform sampling times in the context of scrambler/descrambler synchronization, does not lead to a reasonable expectation of success in using non-uniform sampling times in the context of watermarking and authentication. The Applicant respectfully submits that the teaching or suggestion to make the claimed combination and the reasonable expectation of success are based on impermissible hindsight gleaned from the Applicant's disclosure, not the prior art. It is improper to use the inventor's patent application as an instruction book on how to

reconstruct the prior art. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1 USPQ2d 1593 (Fed. Cir. 1987).

Claims 2-5 and 12-15 depend, directly or indirectly, from independent claims 1 and 11, respectively, and set forth all of the limitations therein plus additional limitations that are not disclosed or suggested by the cited art. For example, claim 2 requires sampling at a rate such that an average sampling frequency is greater than or equal to twice the highest frequency in the input signals. The Examiner admits that the Lee et al. patent does not explicitly disclose this limitation, but that making the average sampling frequency greater than or equal to twice the highest frequency of the input signals would have been obvious to a person of ordinary skill in the art to achieve a desired purpose. In addition, the Examiner rejects claim 4 under the same rationale. Claim 4 requires the sampling rate has an unevenness which is pseudo-random and the unevenness is less than about thirty per cent of the corresponding sampling period. However, neither in the case of claim 2 nor in the case of claim 4 does the Examiner provide any basis, founded in the prior art, for these allegations. In other words, the Examiner's rationale is unsupported by the prior art. By such additional limitations, and for the reasons discussed above with respect to independent claims 1 and 11, the Applicant respectfully submits that dependent claims 2-5 and 12-15 also patentably define over the prior art.

Therefore, the Applicant respectfully requests reconsideration and withdrawal of this rejection of claims 1-6, 11-16 and 24 under §103(a).

III. Conclusion

In view of the foregoing comments and amendments, the Applicant respectfully submits that all of the pending claims (i.e., claims 1-9, 11-19, 24 and 25) are in condition for allowance and that the application should be passed to issue.

If a conference would be of value in expediting the prosecution of this application, and possibly avoiding the delay of an appeal process, the Examiner is hereby encouraged to telephone the undersigned counsel at (847) 462-1937 to arrange for such a conference.

Respectfully submitted,

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